ORDER NO. MB9602002C2

Service Manual

Compact Disc Player

Compact Disc Player

SL-PG480A

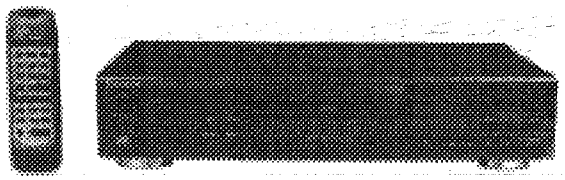
COMPACT disc DIGITAL AUDIO

DIGITAL

MASH* multi-stage noise shaping

Colour

(K) : Black



Areas

Suffix for Model No.	Area	Colour
(E)	Europe	(K)
(EB)	Britain	
(EG)	Germany and Italy	

RAE1100Z MECHANISM SERIES

SPECIFICATIONS\ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ
OPERATION CHECK AND MAIN COMPONENT REPLACEMENT PROCEDURES\ПРОВЕРКА РАБОТОСПОСОБНОСТИ И МЕТОДИКА ЗАМЕНЫ ОСНОВНЫХ КОМПОНЕНТОВ
AUTOMATIC ADJUSTMENT RESULTS DISPLAY FUNCTION\ФУНКЦИЯ ОТОБРАЖЕНИЯ РЕЗУЛЬТАТОВ АВТОМАТИЧЕСКОЙ РЕГУЛИРОВКИ
SCHEMATIC DIAGRAMS\ПРИНЦИПИАЛЬНЫЕ СХЕМЫ
WIRING CONNECTION DIAGRAM\СХЕМА СОЕДИНЕНИЯ
FUNCTION OF IC TERMINALS\ФУНКЦИОНАЛЬНОЕ НАЗНАЧЕНИЕ ВЫВОДОВ ИНТЕГРАЛЬНЫХ СХЕМ
BLOCK DIAGRAM\БЛОК-СХЕМА
REPLACEMENT PARTS LIST\СПИСОК ЗАПАСНЫХ ЧАСТЕЙ
CABINET PARTS LOCATION\РАСПОЛОЖЕНИЕ ЧАСТЕЙ КОРПУСА
LOADING UNIT PARTS LOCATION\РАСПОЛОЖЕНИЕ ЧАСТЕЙ ЗАГРУЗОЧНОГО МЕХАНИЗМА
PACKAGING\УПАКОВКА

© 1996 Matsushita Electric Industrial Co., Ltd.
All rights reserved. Unauthorized copying and distribution is a violation of law.

Technics

Specifications

■ Audio

No. of channels	2 (left and right, stereo)
Frequency response	2 – 20,000 Hz, ± 1 dB
Output voltage	2 V (at 0 dB)
Dynamic range	92 dB
S/N	100 dB
Harmonic distortion	0.005% (1 kHz, 0 dB)
Total harmonic distortion	0.007% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH (1 bit)
Output impedance	1 kΩ
Load impedance	More than 10 kΩ

■ Pickup

Wavelength	780 nm
Laser Power	No hazardous radiation is emitted (with safety protection)

■ General

Power consumption	13 W
Power supply	AC 50/60 Hz, 230 – 240 V
Dimensions (W × H × D)	430 × 92 × 283 mm
Weight	3.1 kg

Note:

Specifications are subject to change without notice.

Weight and dimensions are approximate.

For United Kingdom only:

This apparatus was produced to BS 800.

*

• MASH is a trademark of NTT.

■ Operetion Check and Main Component Replacement Procedures

Warning: This product uses a laser diode. Refer to caution statements on page 2.
ACHTUNG: • Die lasereinheit nicht zerlegen.
• Die lasereinheit dart nur gegen eine vom hersteller speziferte einheit ausgetauscht werden.
"ATTENTION SERVICER" Some chassis components may have sharp edges. Be careful when disassembling and servicing.

NOTE

1. **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
2. **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**
3. **Select items from the following index when checks or replacement are required.**
4. **Illustrated screws are equivalent to actual size.**
5. **Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.**

• Contents

• Checking Procedure for each P.C.B. Page
1.Checking for the main P.C.B. and operation P.C.B.. ..... 7,8.
2.Checking for the servo P.C.B.. ..... 9.

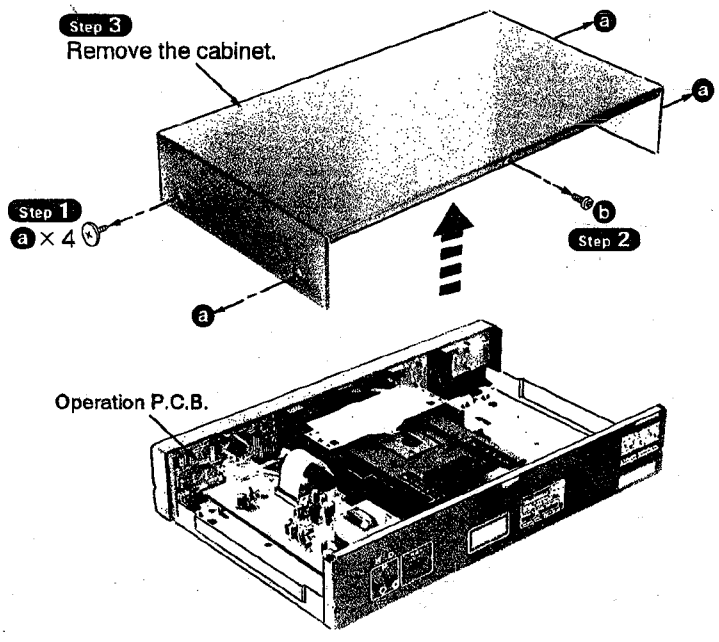
• Main Component Replacement Procedures
1.Replacement for the traverse unit ass'y. ..... 10~12.
2.Replacement for the loading belt and loading motor. ..... 13.

■ Checking Procedure for each P.C.B.

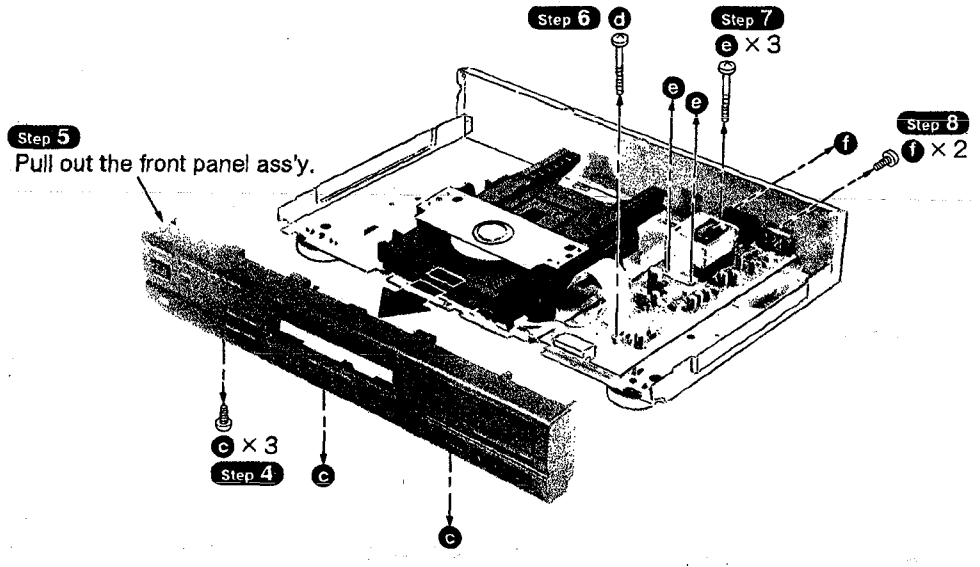
1. Checking for the main P.C.B. and operation P.C.B.

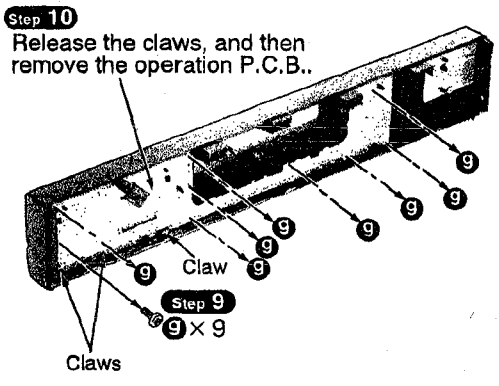
ⓐ
[RHD30035–K1] (Black)

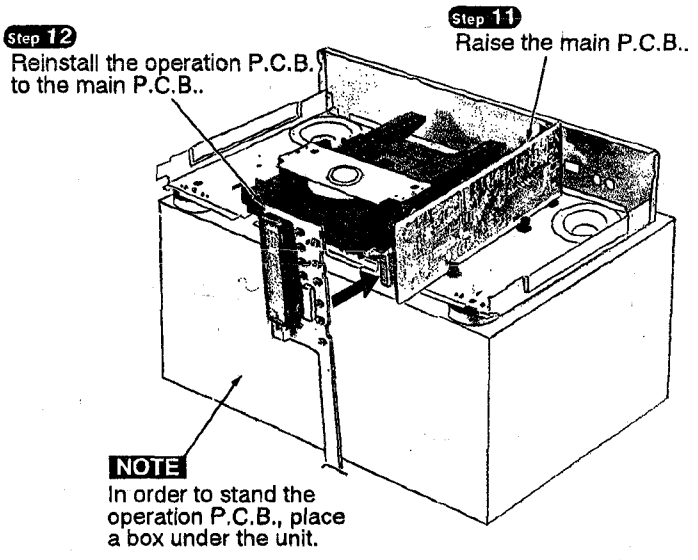
ⓑ
[XTBS3+8JFZ1] (Black)



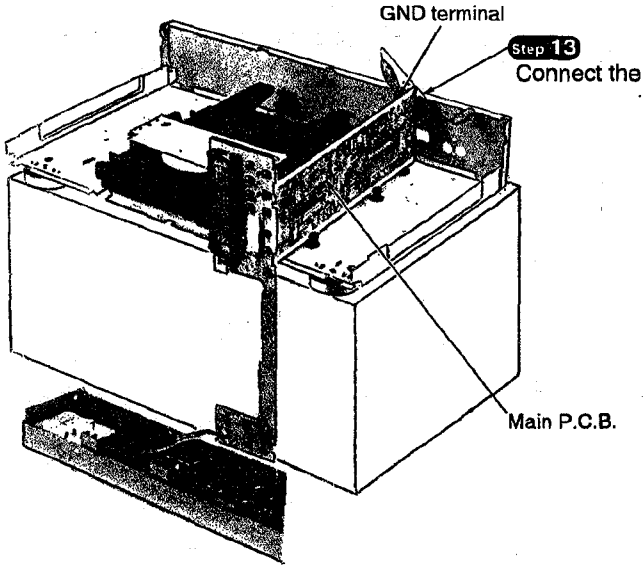
• Check the operation P.C.B. in this condition.

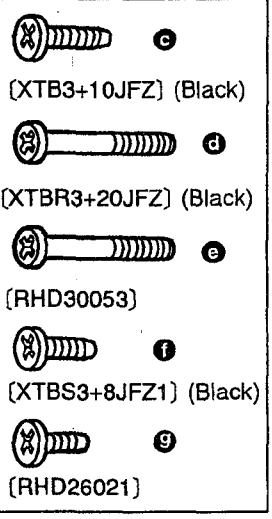




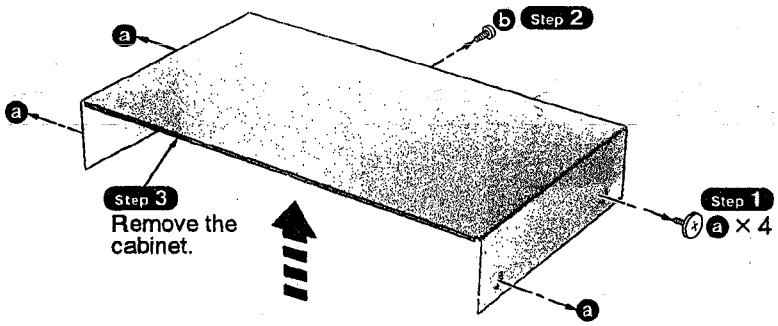


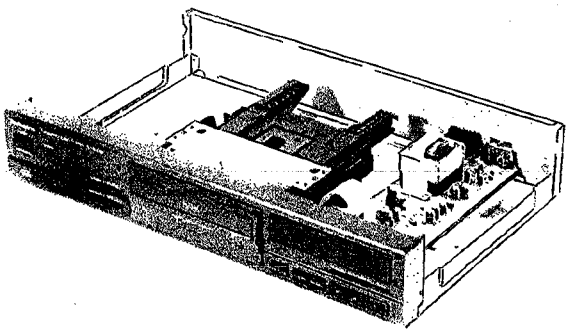
• **Check the main P.C.B. as shown below.**

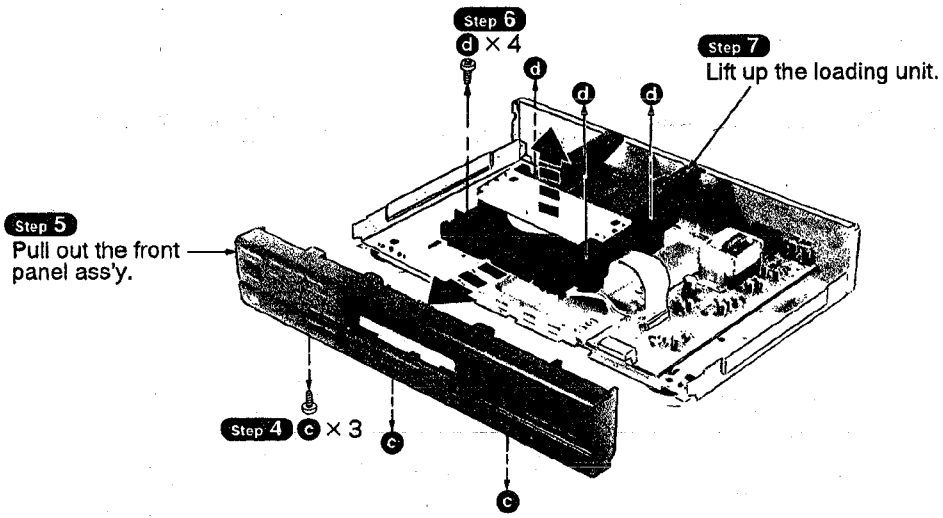




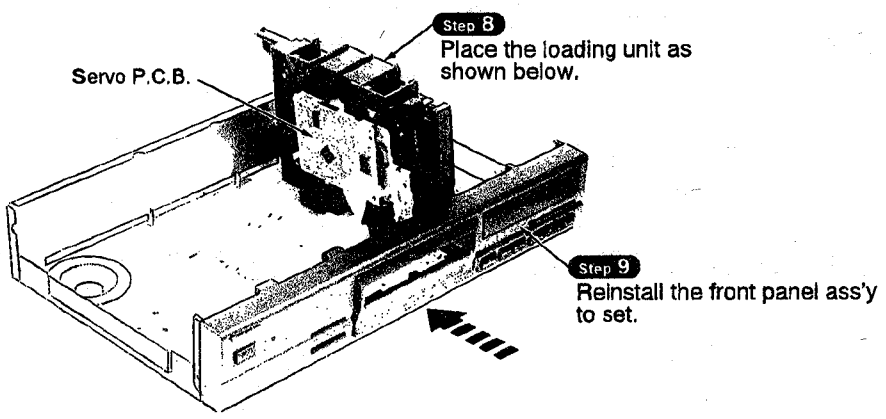
2. Checking for the servo P.C.B.

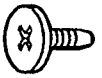






• Check the servo P.C.B. as shown below.





[RHD30035–K1] (Black)

[XTBS3+8JFZ1] (Black)

[XTB3+10JFZ] (Black)

[XTB3+8JFZ] (Black)

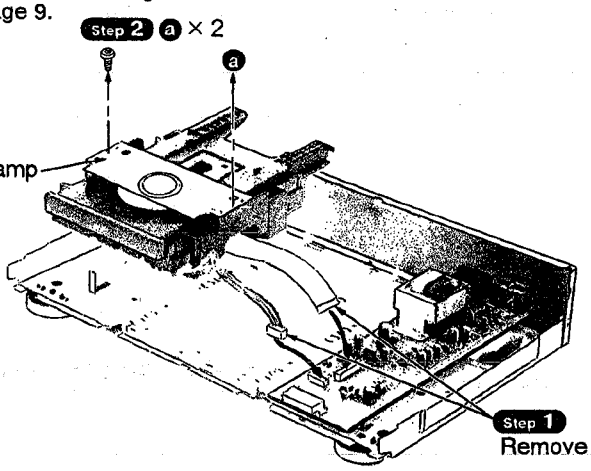
■ Main Component Replacement Procedures

1. Replacement for the traverse unit ass'y

ⓐ (XTB3+8JFZ) (Black)

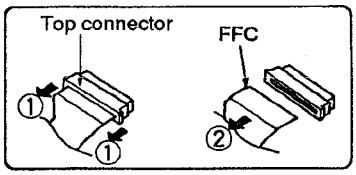
ⓑ (XTBS26+8J)

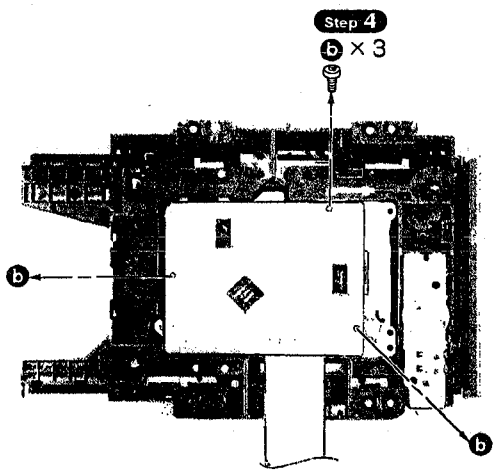
• Follow the Step 1 ~ Step 7 of item 2 in checking procedure for each P.C.B. on page 9.

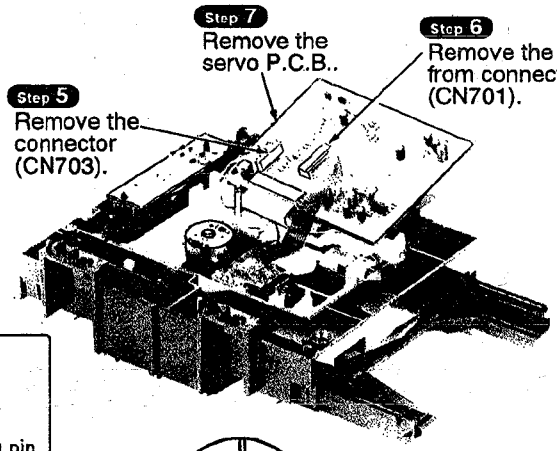


■ **Removal of the FFC**

• Push the top of the connector in the direction of arrow ①, and then pull out the FFC in the direction of arrow ②FFC.

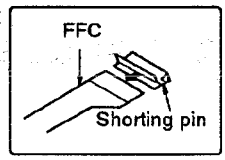


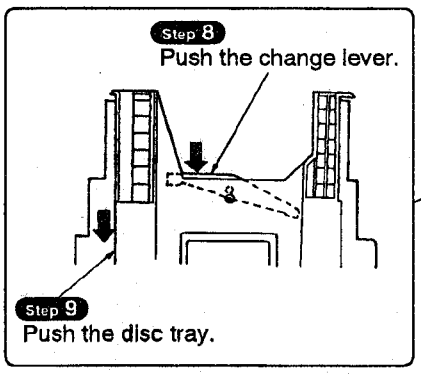


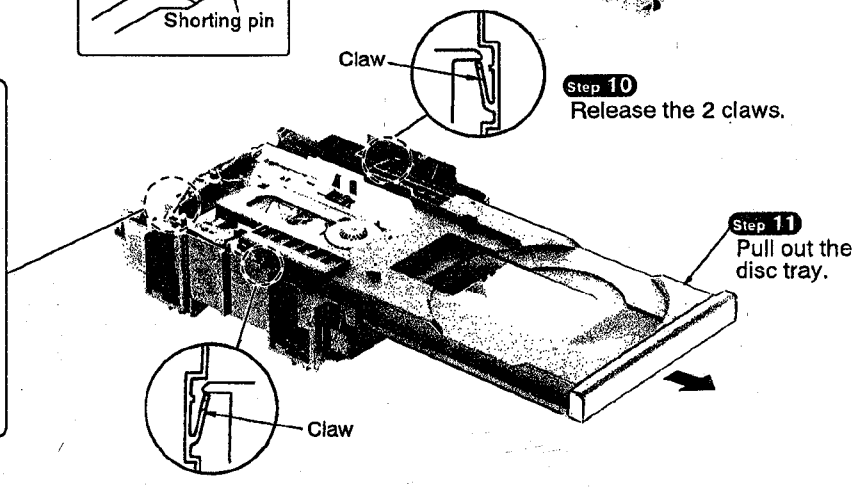


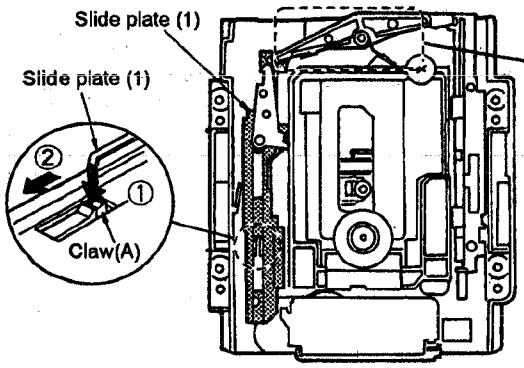
NOTE

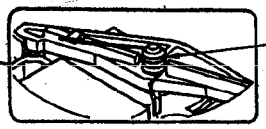
Insert a shorting pin into the traverse unit FFC. (Refer to Handing Precautions for Traverse Deck on page 2.)







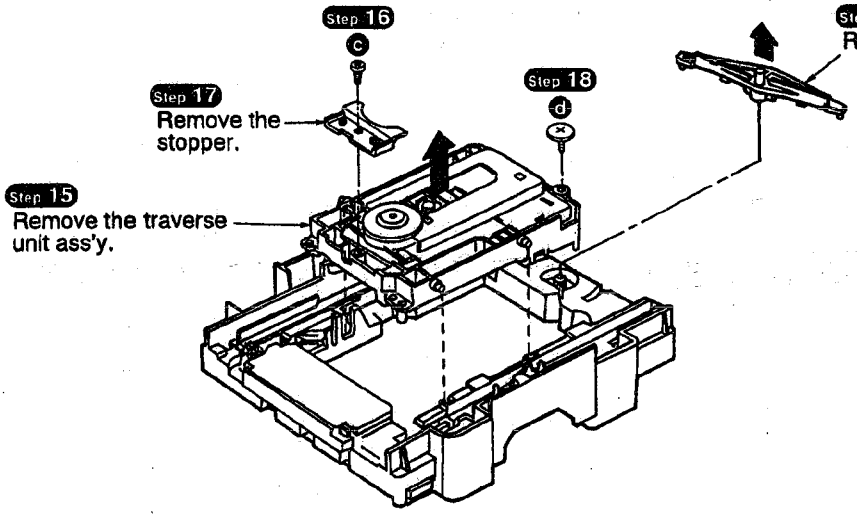




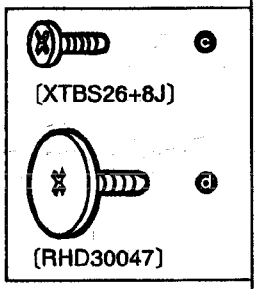
Step 12
Remove the spring.

NOTE
Be careful not to damage the claw (A) because the claw (A) is breakable.

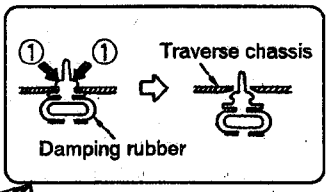
Step 13
Push the claw (A) in the direction of arrow ①, and then move the side plate (1) in the direction of arrow ②.



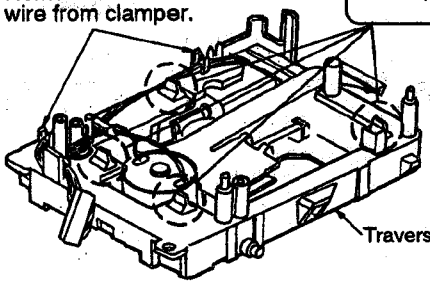
Step 14
Remove the change lever.

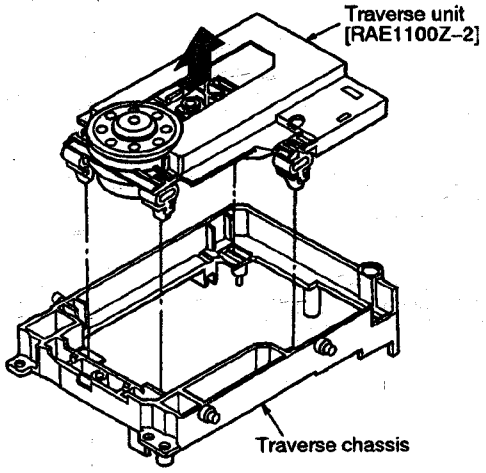


Step 20
Remove the damping rubber from traverse chassis.



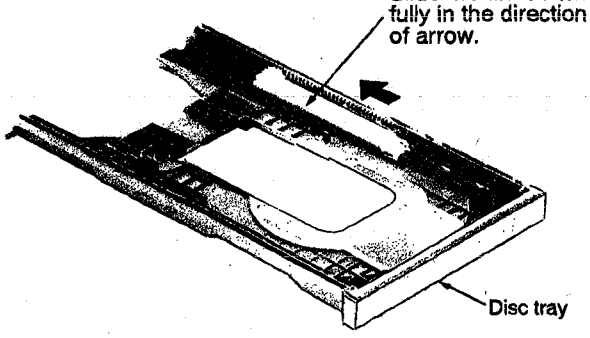
Step 19
Remove the lead wire from clamper.



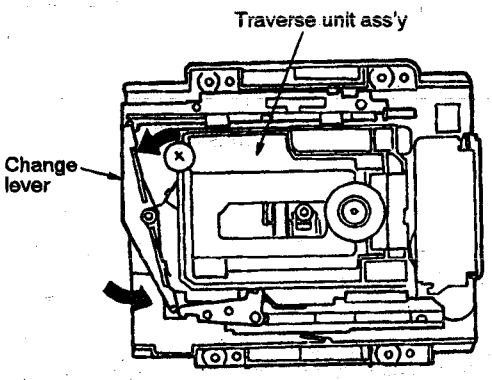


Installation of the disc tray after replacement

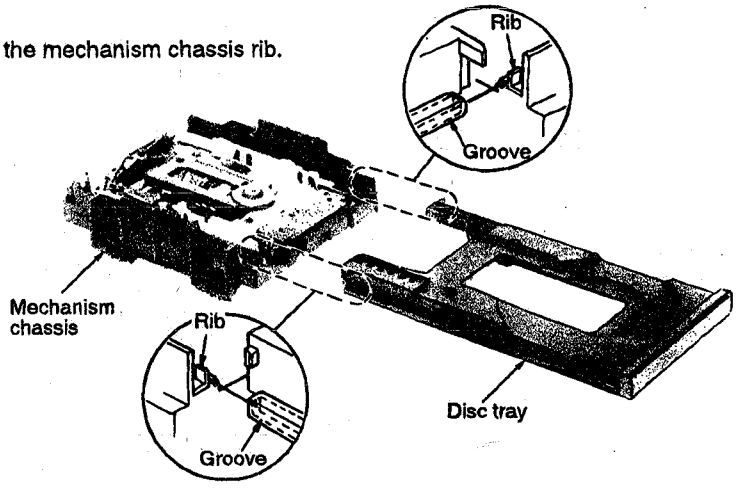
Step 1
Slide the drive rack fully in the direction of arrow.



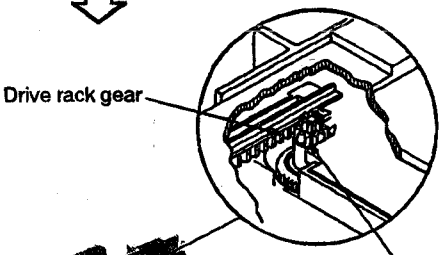
Step 2
Slide the change lever, and then leave the traverse unit ass'y falling.



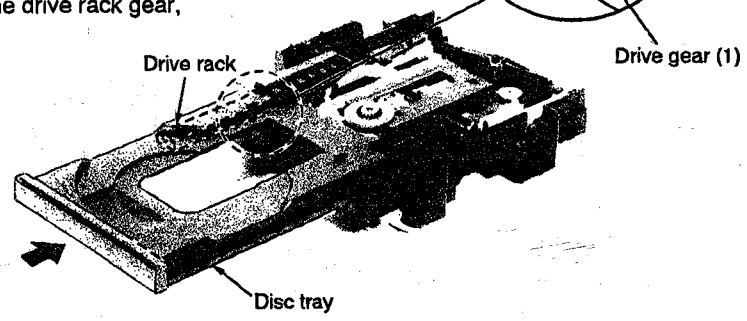
Step 3
Align the disc tray groove with the mechanism chassis rib.



Step 4
Slide the disc tray in the direction of arrow. Then, put the drive rack manually so that the drive gear (1) engages with the drive rack gear.

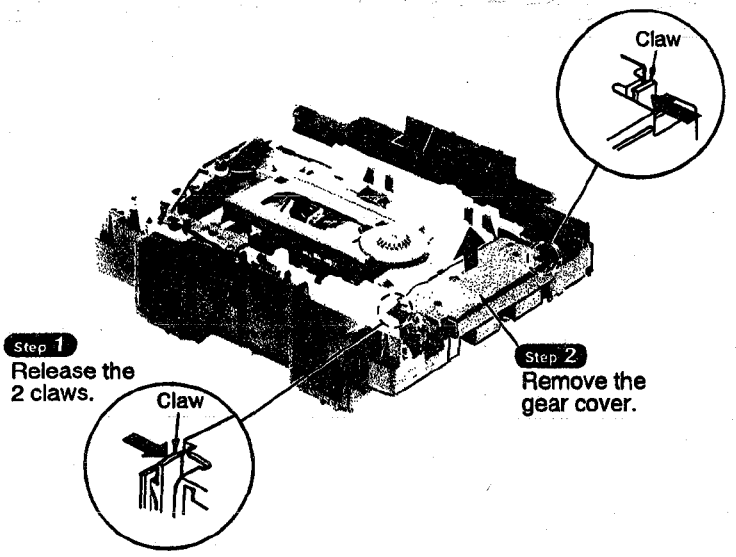


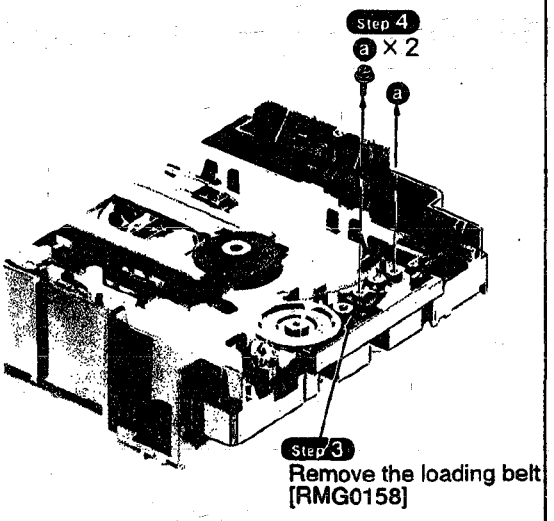
Step 5
Afrer the drive gear (1) engaged with the drive rack gear, slide the disc tray.

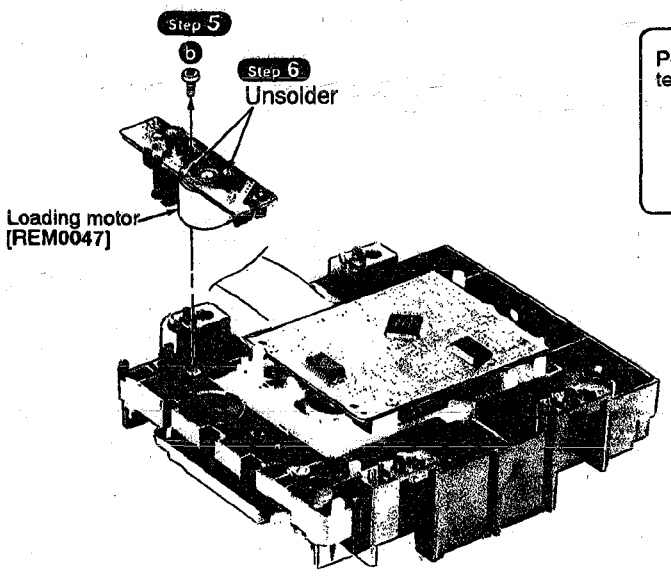


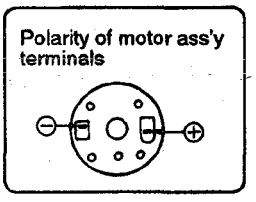
2. Replacement for the loading belt and loading motor

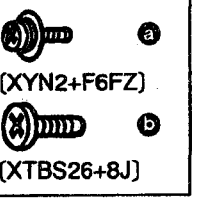
- Follow the Step 1 ~ Step 7 of item 2 in checking procedure for each P.C.B. on page 9.
- Follow the Step 1 ~ Step 11 of item 1 in main component replacement procedures on page 10.











■ Automatic Adjustment Results Display Function

(Self-Check Function)

This unit has a function that uses the FL display board to indicate the results of automatic adjustment of the servo-circuit (tracking, focus, offset, etc.) as error codes. The error code display indicates the location of failures from automatic adjustment circuit.

The following procedure displays the error codes from the self-diagnostic function.

● Procedure for displaying automatic adjustment codes

1. Plug in the power cord and wait for the STANDBY LED to flash, indicating the unit is in standby status.
2. Turn on the power supply switch while pressing the STOP (■), PAUSE (▮▮) and PLAY (▶) buttons at the same time.
3. The "F^E_C_" code is displayed 2 or 3 seconds later to indicate the automatic adjustment results mode.
4. Push the OPEN/CLOSE button to open the disc tray and then load the test disc (SZZP1054C).
5. Push the OPEN/CLOSE button again to close the disc tray.
6. After automatic adjustment, the code display indicates the location of failures in the servo circuit.

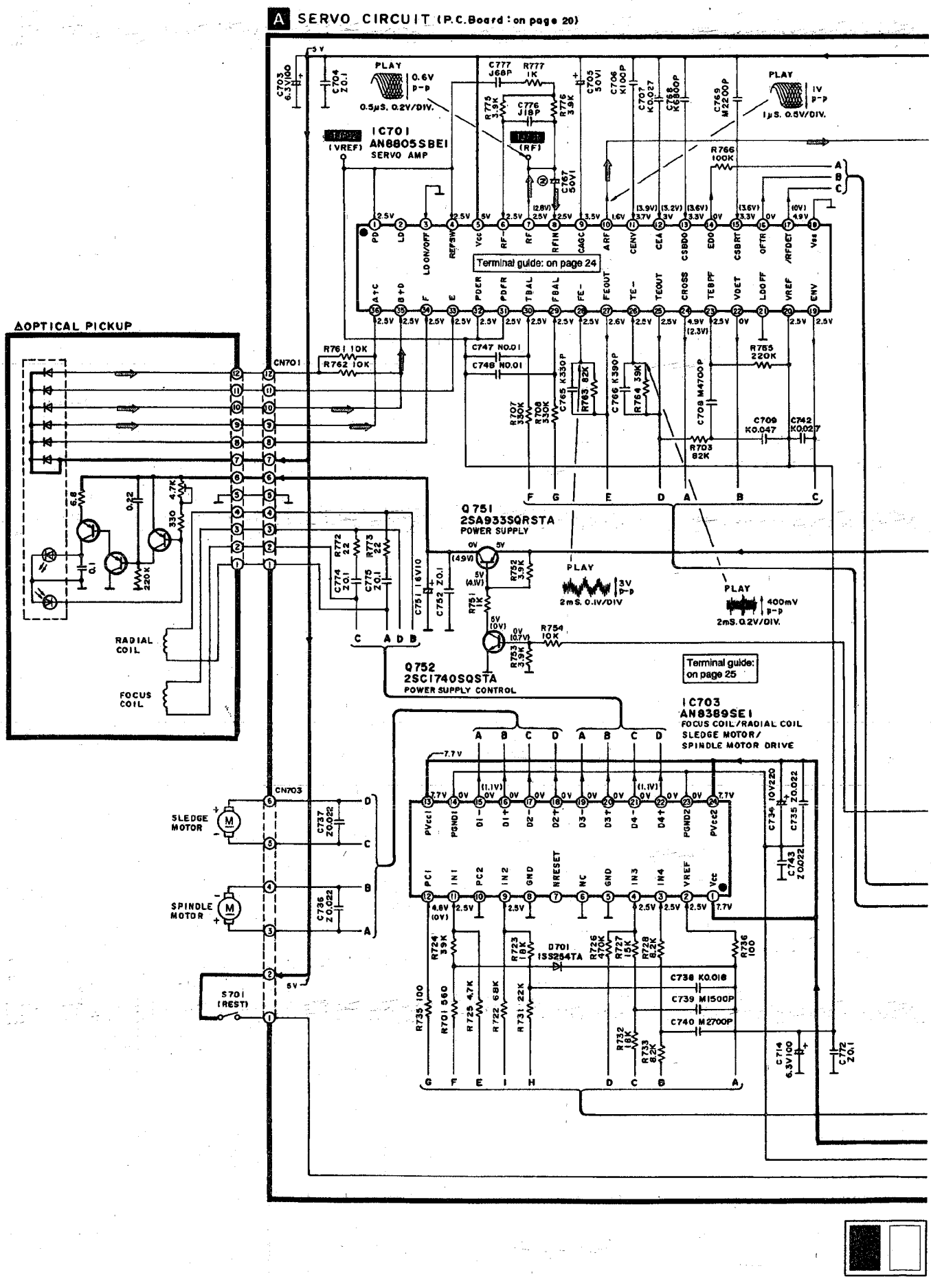
● Troubleshooting using the automatic adjustment code

Notes:

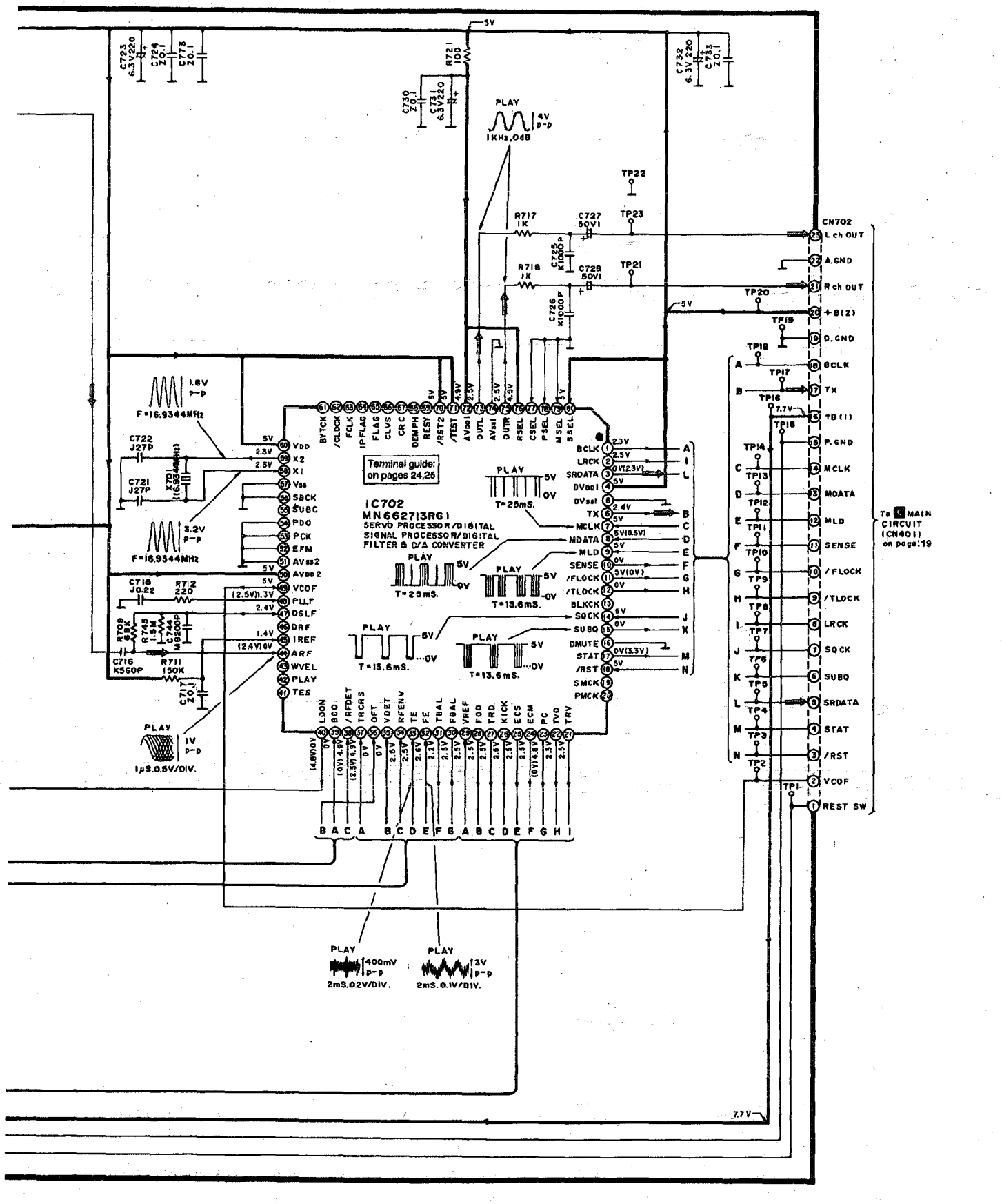
1. If "E-00" or "E-20" is displayed as an error code, this means no error was found.
2. Check the disc and laser-detector lens for damage, contamination or stains.

• Take out the test disc and turn off the power, which terminates the automatic adjustment results mode.

FL error code display	Symptom	Probable cause	Signal to check		Normal voltage and waveform values	
			Location	Signal name	PLAY	STOP
E-01	Focus and tracking offset adjustments not completed in specified time period.	①Clocks X1 and X2, power supply VDD, and reset (/RST), all on IC702. ②MDATA, MCLK, MLD, and SENSE signals to/from mechanism controller.	IC702 ⑧ pin	MDATA	PLAY 5 V 0 V T= 25 ms.	5.0 V
			IC702 ⑦ pin	MCLK	PLAY 5 V 0 V T=13.6 ms.	5.0 V
			IC702 ⑨ pin	MLD		
			IC702 ⑩ pin	SENSE	0 V	0 V
			IC702 ⑱ pin	/RST	5.0 V	5.0 V
			IC702 ⑱ pin	X1	3.2 Vp-p F=16.9344 MHz	3.2 Vp-p F=16.9344 MHz
			IC702 ⑲ pin	X2	1.6 Vp-p F=16.9344 MHz	1.6 Vp-p F=16.9344 MHz
E-03 E-05 E-07 E-09 E-0B E-0D E-0F	Disc play unstable	①Scratches or contaminants on disc surface ②Focus and Tracking servo circuits (check waveforms, voltages, and part values.) ③Spindle driver circuit ④Optical pickup	IC702 ㉜ pin	F E	PLAY 3 Vp-p 2 ms. 0.1 V/DIV.	2.6 V
			IC702 ㉝ pin	T E	PLAY 400 mVp-p 2 ms. 0.2 V/DIV.	2.5 V
			IC702 ㉘ pin	FOD	2.5 V	2.5 V
			IC702 ㉗ pin	TRD	2.5 V	2.5 V
			IC702 ㉖ pin	KICK	2.5 V	2.5 V
			IC702 ⑪ pin	/FLOCK	0 V	5.0 V
			IC702 ㊳ pin	/RF DET	0 V	4.9 V
			TJ701	R F	PLAY 0.6Vp-p 0.5 µs. 0.2 V/DIV	2.5 V
			IC702 ⑰ pin	STAT	3.3 V	0 V
E-04 E-06 E-0C E-0E	Best "eye" (PD balance) adjustment not completed in specified time period.	①Scratches or contaminants on disc surface ②Focus servo circuit (check waveforms, voltages, and part values.) ③Optical pickup	IC702 ㉚ pin	FBAL	2.5 V ± 1.25 V	2.5 V ± 1.25 V
			TJ701	R F	PLAY 0.6Vp-p 0.5 µs. 0.2 V/DIV	2.5 V
			IC702 ㉜ pin	F E	PLAY 3 Vp-p 2 ms. 0.1 V/DIV.	2.6 V
			IC702 ㊱ pin	O F T	0 V	0 V
			IC702 ⑫ pin	/TLOCK	0 V	0 V
E-08 E-0A	Focus or Tracking gain adjustment not completed in specified time period.	①Scratches or contaminants on disc surface ②Focus and Tracking servo circuit (check waveforms, voltages, and part values.) ③Optical pickup	IC702 ㉜ pin	F E	PLAY 3 Vp-p 2 ms. 0.1 V/DIV.	2.6 V
			IC702 ㉝ pin	T E	PLAY 400 mVp-p 2 ms. 0.2 V/DIV.	2.5 V
			IC702 ㊱ pin	O F T	0 V	0 V
			IC702 ⑫ pin	/TLOCK	0 V	0 V


A SERVO CIRCUIT (P.C.Board : on page 20)
IC701
AN8805SBEI
SERVO AMP
Terminal guide: on page 24
OPTICAL PICKUP
CN701
RADIAL COIL
FOCUS COIL
Q751
2SA933SQRSTA
POWER SUPPLY
Q752
2SC1740SQSTA
POWER SUPPLY CONTROL
Terminal guide: on page 25
IC703
AN8389SEI
FOCUS COIL/RADIAL COIL
SLEDGE MOTOR/
SPINDLE MOTOR DRIVE
CN703
SLEDGE MOTOR
SPINDLE MOTOR
S701
(REST)
D701
1SS254TA
PLAY
0.6V p-p
0.5μS. 0.2V/DIV.
1V p-p
1μS. 0.5V/DIV.
3V p-p
2mS. 0.1V/DIV
400mV p-p
2mS. 0.2V/DIV.

: Positive voltage line : Negative voltage line : CD signal Line



B POWER SWITCH CIRCUIT
(P.C.Board:on page 20)

: Positive voltage line
: Negative voltage line
: CD signal Line

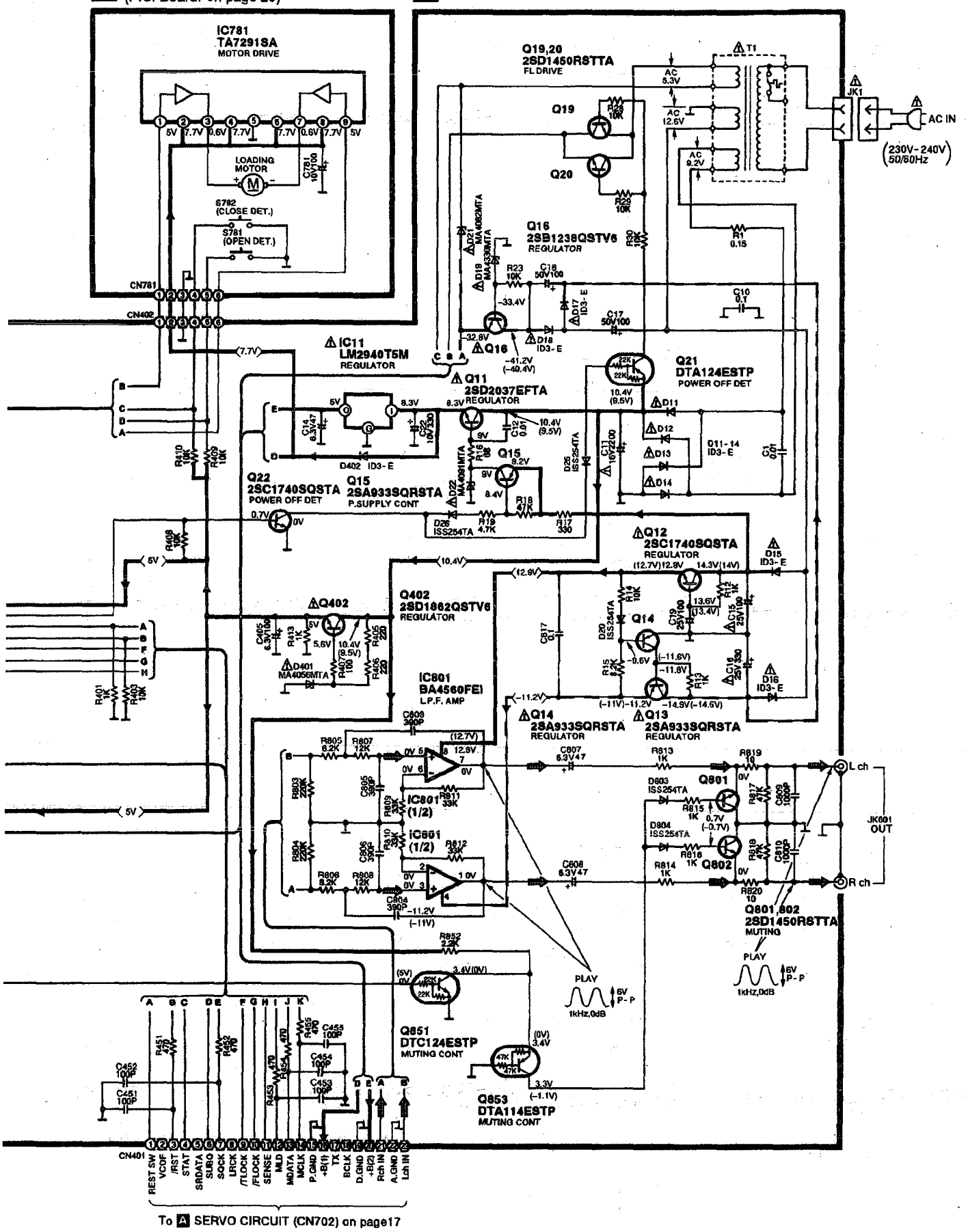
S651 (POWER)
D651 SLR-305LC
R651 220
(STANDBY)
FC651

C OPERATION CIRCUIT (P.C.Board:on page 21)

R411 10K
5V
IC651 RCD12042TH REMOTE SENSOR
OUT GND Vdd
C651 6.3V47
Q51,52 2SC1740SQSTA RESET
Q52
Q51
R54 47K
R53 47K
R52 2.7K
R51 330
D51 MA4039MTA
C404 0.01
C401 0.01
X401 (4.23MHz)
F=4.23MHz
3.5V P-P
2.2V P-P
S605 (RANDOM)
S604 (PEAK SEARCH)
S602 (AUTO CUE)
S601 (TIME MODE)
S625 (REPEAT)
S624 (PROGRAM)
S623 (▲OPEN/CLOSE)
S628 (⏮/◀◀)
S621 (▶▶/▶▶⏭)
S630 (RECALL)
S629 (CLEAR)
S622 (■)
S627 (▶)
S626 (■)
Terminal guide: on page 23
IC401 UPD78042A014 SYSTEM CONT. FL DRIVE
P32 P31 P30 /M RST EMPH /DMUTE REMOCON GND /STANDBY LED /PAUSE LED /PLAY LED Vdd POWER SW P126 P125 P124 P123 P122 P121 P120 P16 P15 P14 P13
P33 P34 P35 P36 P37 X2 X1 GND NC GND GND Vdd /POWER OFF /S RST /TLOCK
/FLOCK SENSE /CLOSE /OPEN GND /CLOSE SW /OPEN SW /RST SUBQ NC /SQCK /D MUTE2 /MLD STAT MDATA MCLK Vdd
P12 P11 P10 P9 P8 P7 Vpp P6 P5 P4 P3 P2 P1 10G 9G 8G
1G 2G 3G 4G 5G 6G 7G
R404 10K
D601 D601,605,606 1SS254TA D605 D606
PLAY T=13.6ms.
T=6.4ms.
T=25ms.
CN611 CN411
R601 22
FL DISPLAY
FL601(RSL0201-F)

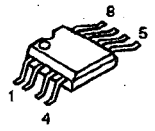
D LOADING MOTOR CIRCUIT
(P.C. Board: on page 20)

E MAIN CIRCUIT (P.C. Board: on page 21)

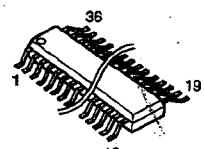


To A SERVO CIRCUIT (CN702) on page17

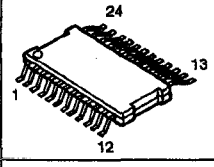
BA4560FE1



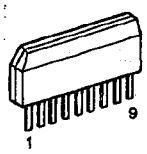
AN8805SBE1



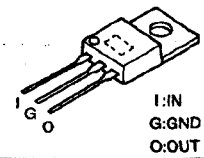
AN8389SE1



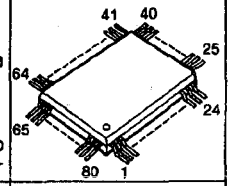
TA7291SA



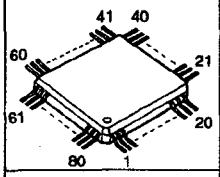
LM2940T5



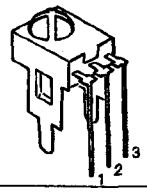
UPD78042A014



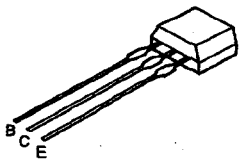
MN662713RG1



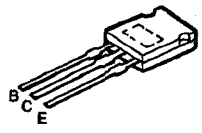
RCD12042TH



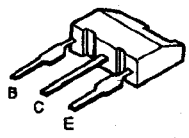
2SA933SQR
2SC1740SQ
DTA114ESTP
DTA124ESTP
DTC124EST



2SD2037EFTA

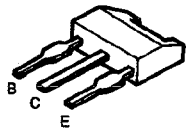


2SB1238QSTV6

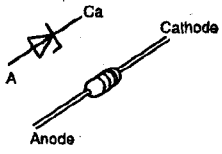


2SD1450RTA

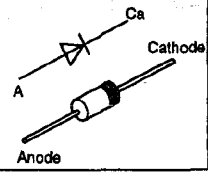
2SD1862QSTV6



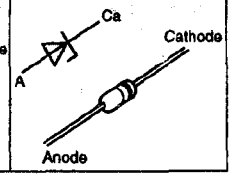
MA4039MTA
MA4056MTA
MA4082MTA
MA4091-M



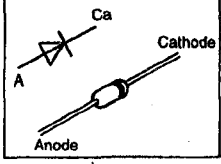
1D3-E



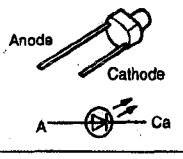
MA4330MTA



1SS254TA

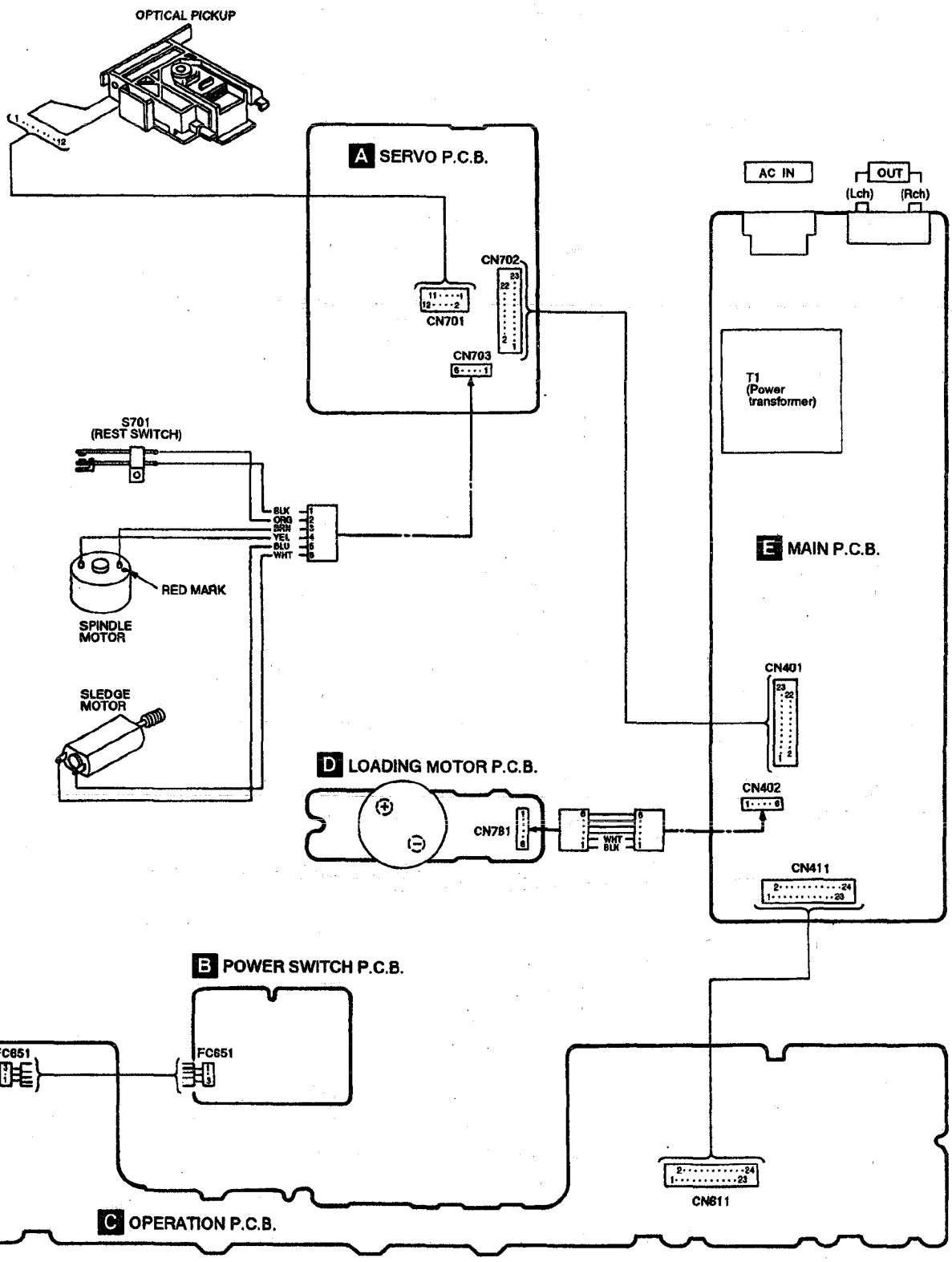


SLR-305LC



■ Wiring Connection Diagram

NOTE:
BLK ····· Black
BLU ····· Blue
BRN ····· Brown
ORG ····· Orange
WHT ····· White
YEL ····· Yellow



■ Function of IC Terminals

● IC401 (UPD78042A014)

Pin No.	Terminal Name	I/O	Function
1 ~ 7	7G1G	O	FL grid drive signal output
8	VDD	—	Power supply (+ 5 V)
9	MCLK	O	Microprocessor command clock
10	MDATA	O	Microprocessor command data
11	STAT	I	Status signal input
12	/MLD	O	Microprocessor command load signal
13	/DMUTE2	O	No used, open
14	SQCK	O	External clock for sub-code Q register
15	NC	—	No used, open
16	SUBQ	I	Sub-code Q input
17	/RST	I	Reset signal input
18	/OPEN SW	I	Disc tray "open" sense switch status
19	/CLOSE SW	I	Disc tray "close" sense switch status
20	GND	—	Connect to GND
21	/OPEN	O	Open Disc Tray command output
22	/CLOSE	O	Close Disc Tray command output
23	SENSE	I	Sense signal input
24	/FLOCK	I	Focus servo pull-in signal
25	/TLOCK	I	Tracking servo pull-in signal
26	/S RST	O	Reset signal output (for servo)
27	REST SW	I	Innermost track sense switch status
28	/POWEROFF	O	Power off command output
29	VDD	—	Power supply (+ 5 V)
30	GND	—	Connect to GND
31	GND	—	Connect to GND
32	NC	—	No used, open
33	GND	—	Connect to GND
34	X1	I	Main clock (4.23 MHz) input
35	X2	O	Main clock output
36 ~ 39	P37 ~ P34	I	No used, open
40	P33	I	Connect to GND
41 ~ 43	P32 ~ P30	I	No used, open

Pin No.	Terminal Name	I/O	Function
44	/MRST	O	Reset signal output for MASH (IC801)
45	EMPH	O	Emphasis signal output
46	/DMUTE	O	Muting signal output
47	REMOCON	I	Remote control signal input
48	GND	—	Connect to GND
49	/STANDBY LED	O	STANDBY LED control signal output
50	/PAUSE LED	O	PAUSE LED control signal output
51	/PLAY LED	O	PLAY LED control signal output
52	VDD	—	Power supply (+ 5 V)
53	POWER SW	I	Power key switch signal input
54 ~ 58	P126 ~ P122	I	Key return signal input
59, 60	P121 ~ P120	—	Connect to GND
61 ~ 66	P16 ~ P11	O	FL anode drive signal and key scan signal output
67 ~ 70	P10 ~ P7	O	FL anode drive signal output
71	VPP	—	Power supply terminal for FL drive (– 32 V)
72 ~ 77	P6 ~ P1	O	FL anode drive signal output
78 ~ 80	10G ~ 8G	O	FL grid drive signal output

● IC701 (AN8805SBE1)

Pin No.	Terminal Name	I/O	Function
1	PD	I	APC amplifier input
2	LD	O	APC amplifier output (No used, open)
3	LD ON/OFF	I	APC ON/OFF control signal
4	REFSW	I	Capacitor connection for CROSS
5	VCC	—	Power supply
6	RF-	I	RF amplifier inversion signal input
7	RF	O	RF amplifier signal output
8	RFIN	I	AGC signal input
9	CAGC	I	AGC loop filter connection
10	ARF	O	AGC signal output
11	CENV	I	Capacitor connection for RF detection
12	CEA	I	Capacitor connection for HPF amplifier
13	CSBDO	I	Capacitor connection for-RF envelope detection
14	EDO	O	BDO signal output
15	CSBRT	I	Capacitor connection for RF envelope detection
16	OFTR	O	OFTR signal output
17	/RFDET	O	RFDET signal output
18	Vss	—	GND
19	ENV	O	3TENV signal output
20	VREF	O	VREF signal output
21	LD OFF	—	APC OFF signal control
22	VDET	O	VDET signal output
23	TEBPF	I	VDET signal input
24	CROSS	O	CROSS signal output
25	TEOUT	O	TE amplifier signal output
26	TE-	I	TE amplifier inversion signal input
27	FEOUT	O	FE amplifier signal output
28	FE-	I	FE amplifier inversion signal input
29	FBAL	I	F BAL control signal
30	TBAL	I	T BAL control signal
31	PDFR	—	Adjustment for I-V amplifier conversion resister
32	PDER	—	Adjustment for I-V amplifier conversion resister
33	E	I	I-V amplifier signal input
34	F	I	I-V amplifier signal input
35	B+D	I	I-V amplifier signal input
36	A+C	I	I-V amplifier signal input

● IC702 (MN662713RG1)

Pin No.	Terminal Name	I/O	Function
1	BCLK	O	Bit clock output for serial data
2	LRCK	—	L/R identification signal output
3	SRDATA	—	Serial data output
4	DVDD1	—	Power supply input (for digital circuit)
5	DVss1	—	GND (for digital circuit)
6	TX	O	Digital audio interface signal output
7	MCLK	I	Microprocessor command clock signal input (Latches data at first transition)
8	MDATA	I	Microprocessor command data signal input
9	MLD	I	Microprocessor command load signal input
10	SENSE	O	Sense signal output (OFT, FESL, MAGEND, NAJEND, POSAD, SFG)
11	/FLOCK	O	Focus servo feeding signal output ("L": Feed)
12	/TLOCK	O	Tracking servo feeding signal output ("L": Feed)
13	BLKCK	O	Sub-code block clock signal output (fBLKCK = 75 Hz during normal playback) (no used, open)
14	SQCK	I	External clock signal input for sub-code Q resister
15	SUBQ	O	Sub-code Q code output
16	DMUTE	I	Muting input ("H": Mute)
17	STAT	O	Status signal output (CRC, CUE, CLVS, TTSTVP, FCLV, SQCK)
18	/RST	I	Reset input
19	SMCK	—	1/2-divided clock signal of crystal oscillating at MSEL = "H" (fSMCK = 8.4672 MHz) 1/4-divided clock signal of crystal oscillating at MSEL = "L" (fSMCK = 4.2336 MHz) (no used, open)
20	PMCK	—	1/192-divided clock signal of crystal oscillating (fPMCK = 88.2 kHz) (no used, open)
21	TRV	O	Traverse forced feed output
22	TVD	O	Traverse drive output
23	PC	O	Spindle motor ON signal output ("L": ON)
24	ECM	O	Spindle motor drive signal output (forced mode output)
25	ECS	O	Spindle motor drive signal output (servo error signal output)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	D/A (drive) output (TVD, ECS, TRD, FOD, FBAL, TBAL) reference voltage input
30	FBAL	O	Focus balance adjustment output
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input
35	VDET	I	Vibration detection signal input ("H": detection)
36	OFT	I	Off-track signal input ("H": off track)

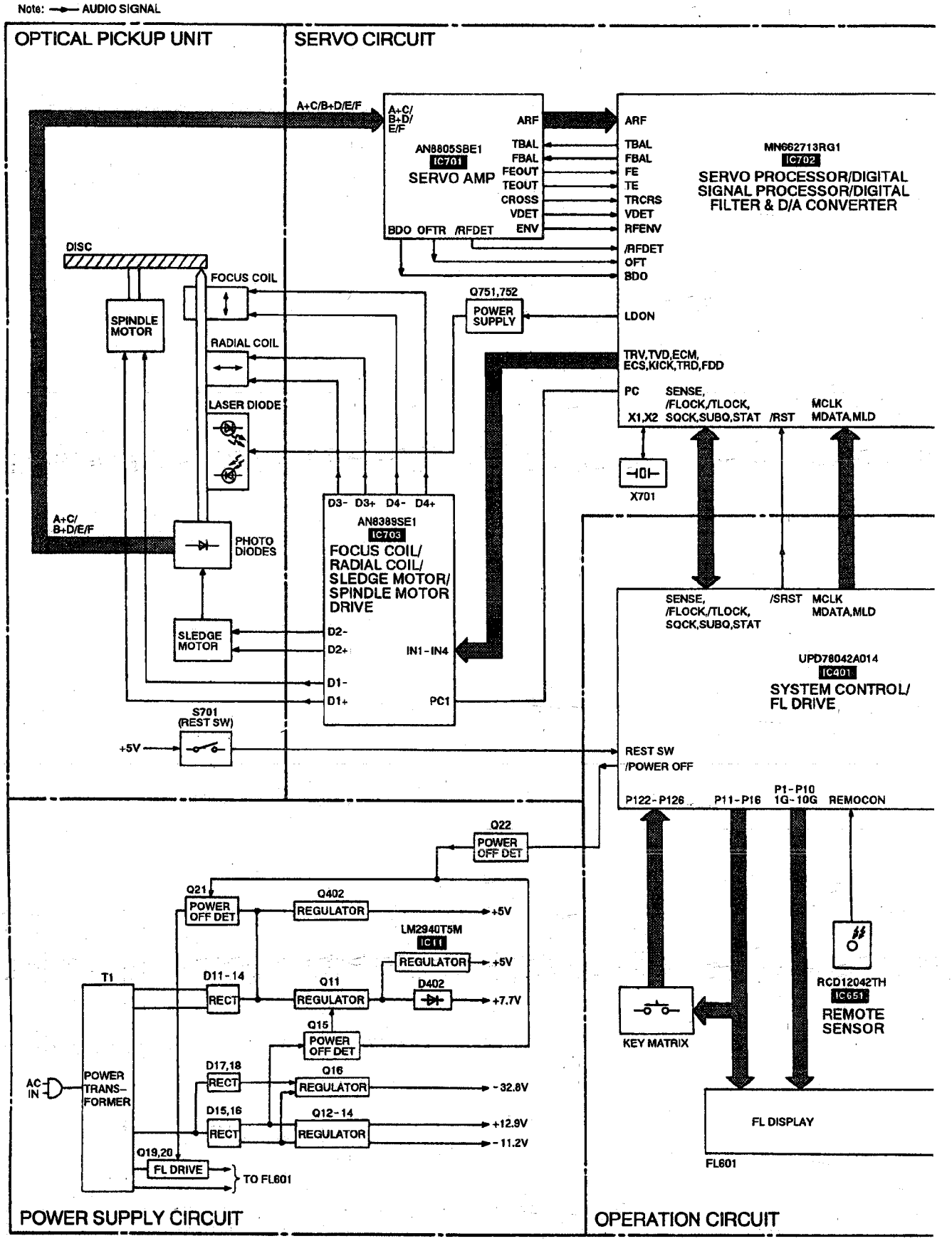
IC702 Continued

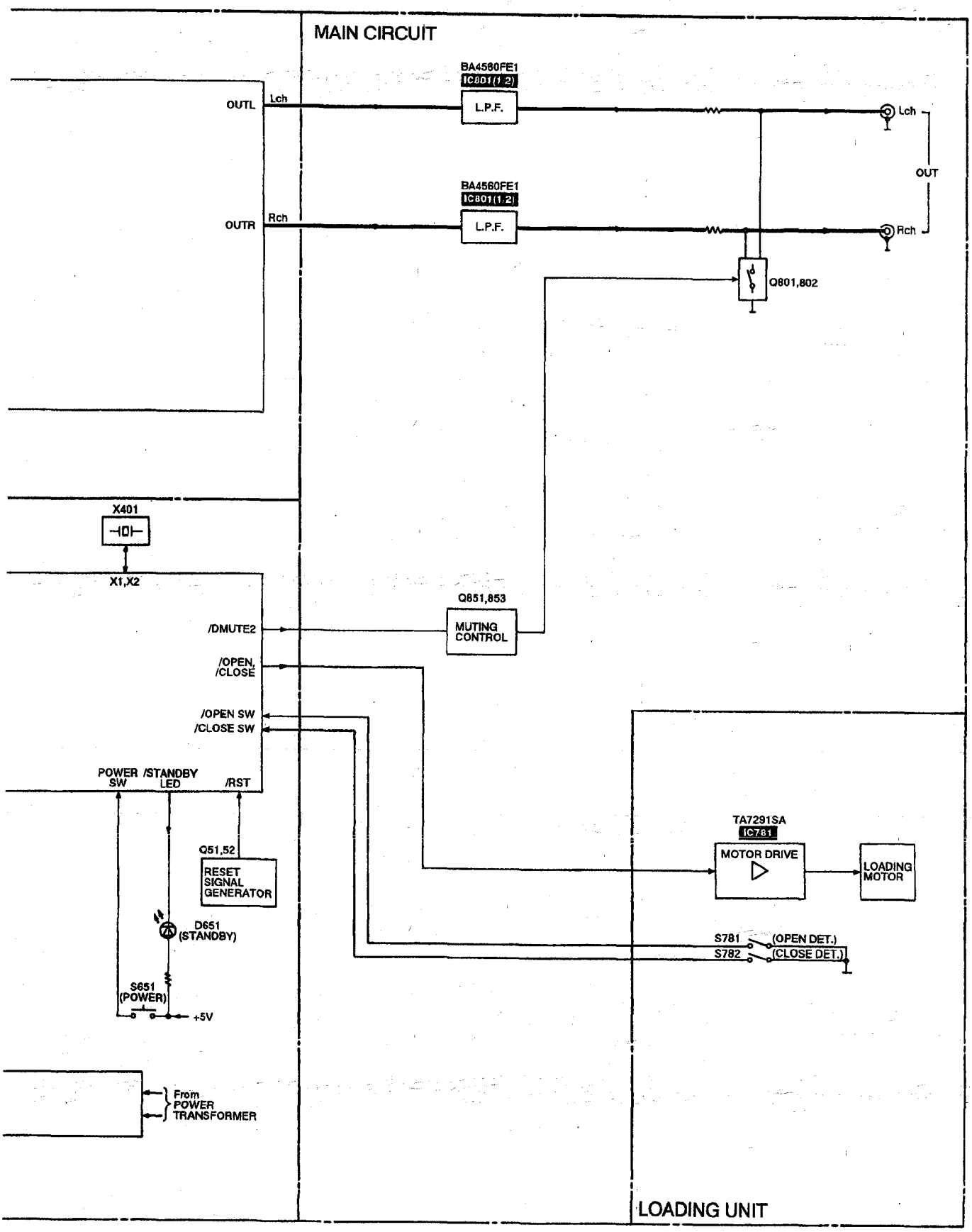
Pin No.	Terminal Name	I/O	Function
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detection signal input ("L": detection)
39	BDO	I	Dropout signal input ("H": Dropout)
40	LDON	O	Laser on signal output ("H": ON)
41	TES	O	Tracking error shunt signal output ("H": shunt) (no used, open)
42	PLAY	O	Play signal out ("H": PLAY) (no used, open)
43	WVEL	O	Double speed status signal output ("H": Double speed) (no used, open)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	—	DSL bias (no used, open)
47	DSLF	I/O	DSL loop filter
48	PLLF	I/O	PLL loop filter
49	VCOF	I/O	VCO loop filter
50	AVDD2	—	Power supply input (for analog circuit)
51	AVss2	—	GND (for analog circuit)
52	EFM	—	EFM signal output (no used, open)
53	PCK	—	PLL extraction clock output (fPCK= 4.321 MHz during normal playback) (no used, open)
54	PDO	—	Phase comparison signal of EFM and PCK signals (no used, open)
55	SUBC	O	Sub-code serial data output (no used, open)
56	SBCK	I	Clock input for sub-code serial data
57	Vss	—	GND
58	X1	I	Crystal oscillating circuit input (f = 16.9344 MHz)
59	X2	O	Crystal oscillating circuit output (f = 16.9344 MHz)
60	VDD	—	Power supply input (for oscillating circuit)
61	BYTCK	—	Byte clock output (no used, open)
62	/CLDCK	O	Sub-code frame clock signal output (fCLDCK = 7.35 kHz during normal playback)
63	FCLK	—	Crystal frame clock signal output (fFCLK = 7.35 kHz, double = 14.7 kHz)
64	IPFLAG	O	Interpolation flag output ("H": Interpolation) (no used, open)
65	FLAG	O	Flag output (no used, open)
66	CLVS	O	Spindle servo phase synchronizing signal output ("H": CLV, "L": rough servo) (no used, open)
67	CRC	O	Sub-code CRC checked output ("H": OK, "L": NG) (no used, open)
68	DEMPH	O	De-emphasis ON signal output ("H": ON) (no used, open)
69	RESY	—	Frame resynchronizing signal output (no used, open)
70	/RST2	I	Reset input through MASH circuit ("L": Reset)
71	/TEST	I	Test input
72	AVDD1	—	Power supply input (for analog circuit)
73	OUTL	O	Left channel audio signal output
74	AVss1	—	GND
75	OUTR	O	Right channel audio signal output
76	RSEL	I	RF signal polarity assignment input (at "H" level: RSEL = "H") (at "L" level: RSEL = "L")
77	CSEL	I	Crystal oscillating frequency designation input ("L": 16.9344 MHz, "H": 33.8688 MHz)
78	PSEL	I	Test input (normally, "L")
79	MSEL	I	Output frequency switching for SMCK terminal "H": SMCK = 8.4672 MHz "L": SMCK = 4.2336 MHz
80	SSEL	I	Output mode switching of SUBQ terminal ("H": Q code buffer mode)

● IC703 (AN8389SE1)

Pin No.	Terminal Name	I/O	Function
1	Vcc	—	Power supply
2	VREF	I	VREF input
3	IN4	I	Motor driver (4) input
4	IN3	I	Motor driver (3) input
5	GND	—	Ground connection
6	NC	—	Ground connection
7	NRESET	—	Reset input (no used, open)
8	GND	—	Ground connection
9	IN2	I	Traverse motor driver (2) input
10	PC2	I	PC2 (power cut) input
11	IN1	I	Spindle motor driver (1) input
12	PC1	I	PC1 (power cut) input
13	PVcc1	—	Power supply (1) for driver
14	PGND1	—	Ground connection (1) for driver
15	D1-	O	Spindle motor driver (1) reverse-action output
16	D1+	O	Spindle motor driver (1) forward-action output
17	D2-	O	Traverse motor driver (2) reverse-action output
18	D2+	O	Traverse motor driver (2) forward-action output
19	D3-	O	Tracking actuator (3) reverse-action output
20	D3+	O	Tracking actuator (3) forward-action output
21	D4-	O	Focus actuator (4) reverse-action output
22	D4+	O	Focus actuator (4) forward-action output
23	PGND2	—	Ground connection (2) for driver
24	PVcc2	—	Power supply (2) for driver

■ Block Diagram




MAIN CIRCUIT
BA4560FE1
IC801(1,2)
OUTL
Lch
L.P.F.
Lch
OUT
BA4560FE1
IC801(1,2)
OUTR
Rch
L.P.F.
Rch
Q801,802
X401
X1,X2
Q851,853
/DMUTE2
MUTING CONTROL
/OPEN, /CLOSE
/OPEN SW
/CLOSE SW
POWER SW
/STANDBY LED
/RST
TA7291SA
IC781
MOTOR DRIVE
LOADING MOTOR
Q51,52
RESET SIGNAL GENERATOR
D651 (STANDBY)
S781
(OPEN DET.)
S782
(CLOSE DET.)
S651 (POWER)
+5V
From POWER TRANSFORMER
LOADING UNIT

■ Replacement Parts List

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.
*Remote Control Ass'y: Supply period for three years from termination of production.
*[MB] Indicates in Remarks columns parts that are supplied by MBV.
*Warning: This product uses a laser diode. Refer to caution statements on page 2.
*ACHTUNG: Die lasereinheit nicht zerlegen.
Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.
*The "(SF)" mark denotes the standard part.

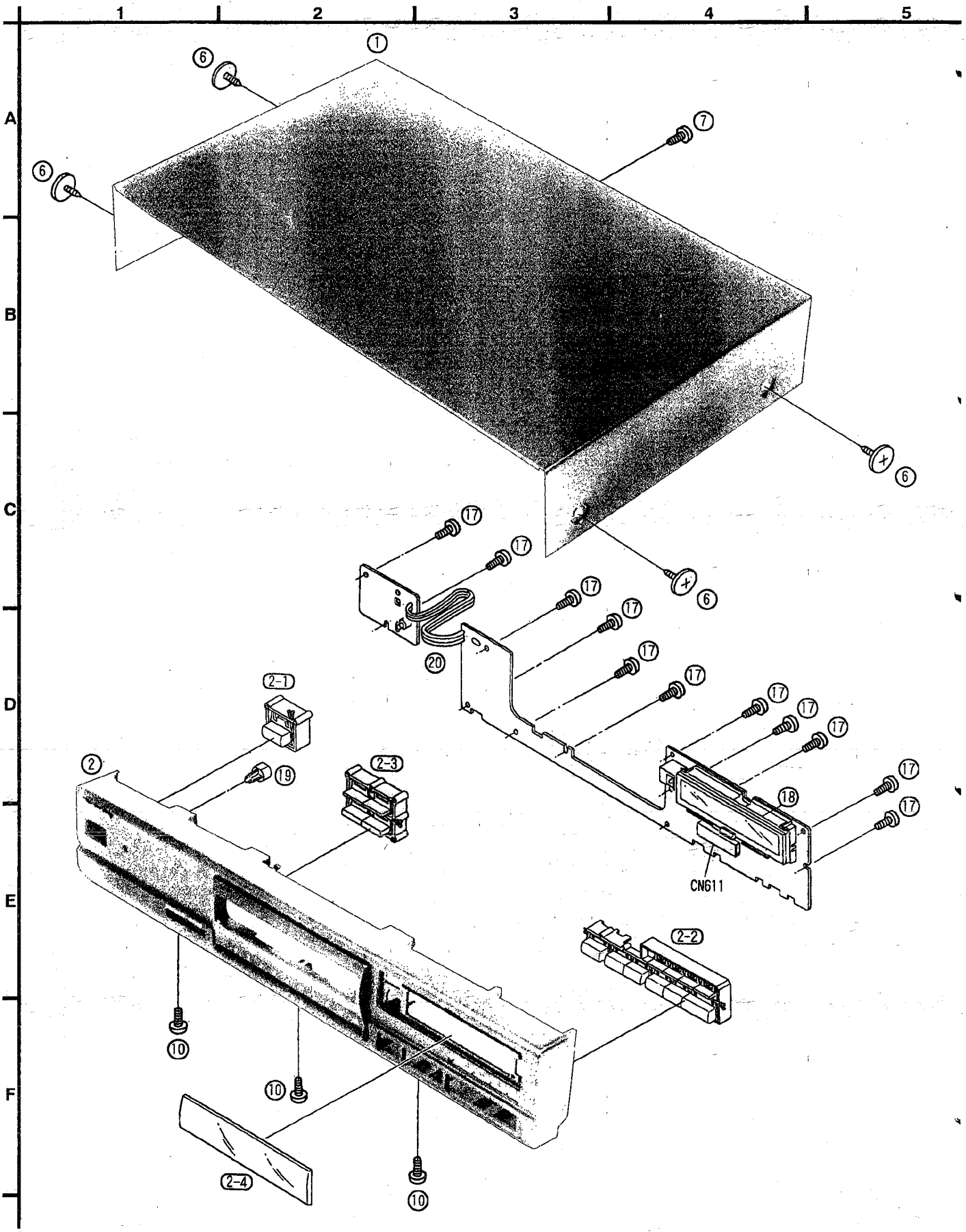
Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC11	LM2940T5	I. C. REGULATOR	⚠
IC401	UPD78042A014	I. C. SYSTEM CONTROL	[MB]
IC651	RCD12042TH	I. C. REMOTE SENSOR	
IC701	AN8805SBE1	I. C. SERVO AMP.	[MB]
IC702	MN662713RG1	I. C. SERVO PROCESSOR	[MB]
IC703	AN8389SE1	I. C. MOTOR DRIVE	
IC781	TA7291SA	I. C. MOTOR DRIVE	
IC801	BA4560FE1	I. C. L. P. F. AMP.	[MB]
		TRANSISTOR(S)	
Q11	2SD2037EFTA	TRANSISTOR	⚠
Q12	2SC1740SQ	TRANSISTOR	⚠
Q13, 14	2SA933SQR	TRANSISTOR	⚠
Q15	2SA933SQR	TRANSISTOR	
Q16	2SB1238QSTV6	TRANSISTOR	⚠
Q19, 20	2SD1450RTA	TRANSISTOR	
Q21	DTA124ESTP	TRANSISTOR	
Q22	2SC1740SQ	TRANSISTOR	
Q51, 52	2SC1740SQ	TRANSISTOR	
Q402	2SD1862QSTV6	TRANSISTOR	⚠
Q751	2SA933SQR	TRANSISTOR	
Q752	2SC1740SQ	TRANSISTOR	
Q801, 802	2SD1450RTA	TRANSISTOR	
Q851	DTC124EST	TRANSISTOR	
Q853	DTA114ESTP	TRANSISTOR	
		DIODE(S)	
D11-18	1D3-E	DIODE	[MB]⚠
D19	MA4330MTA	DIODE	⚠
D20	1SS254TA	DIODE	
D21	MA4082MTA	DIODE	⚠
D22	MA4091-M	DIODE	⚠
D25, 26	1SS254TA	DIODE	
D51	MA4039MTA	DIODE	
D401	MA4056MTA	DIODE	⚠
D402	1D3-E	DIODE	[MB]
D601	1SS254TA	DIODE	
D605, 606	1SS254TA	DIODE	
D651	SLR-305LC	LED	
D701	1SS254TA	DIODE	
D803, 804	1SS254TA	DIODE	
		TRANSFORMER(S)	
T1	RTP1K4B024	POWER TRANSFORMER	[MB]⚠

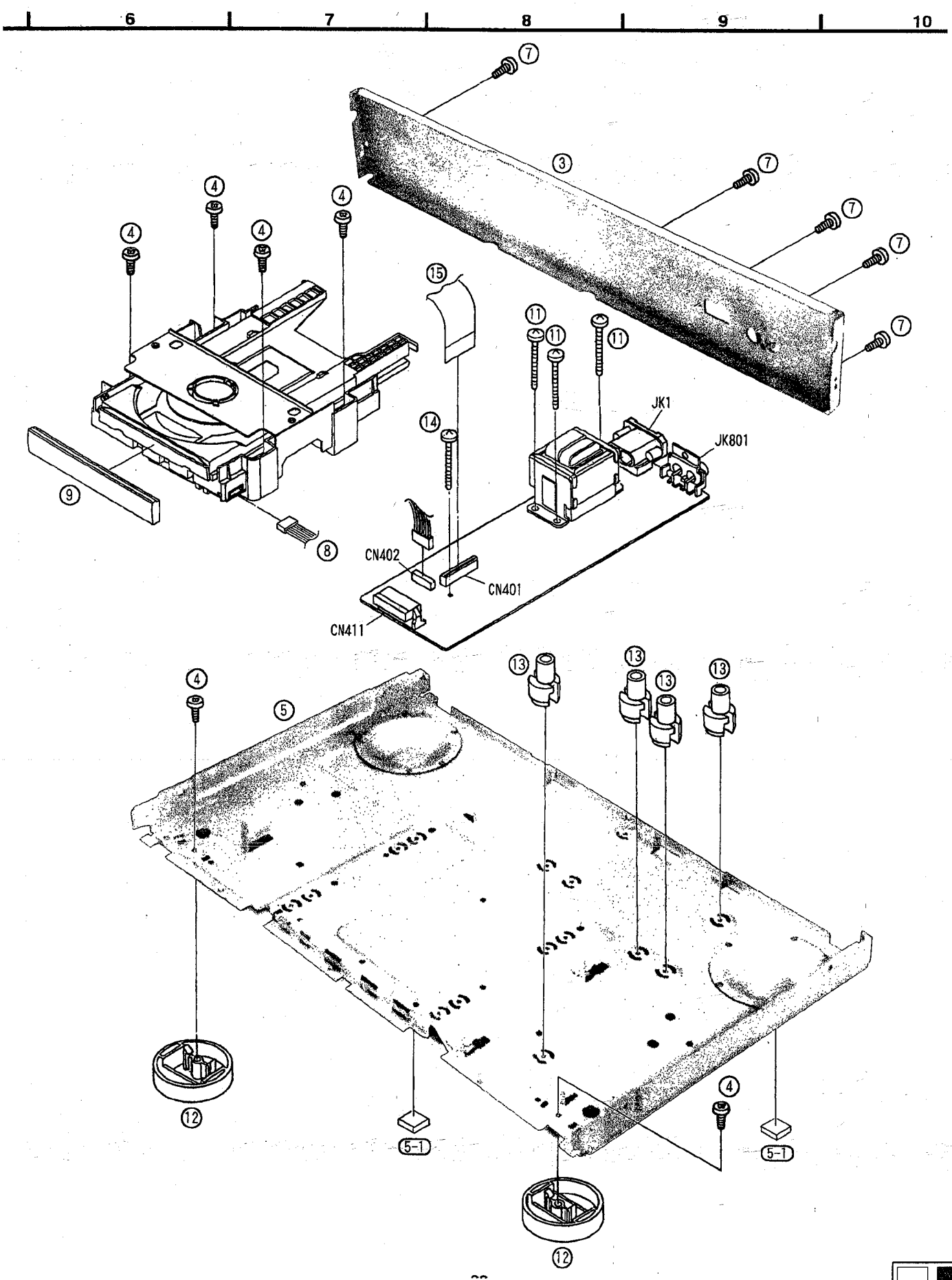
Ref. No.	Part No.	Part Name & Description	Remarks
		OSCILLATOR(S)	
X401	RSXY4M23M01T	OSCILLATOR(4.23 MHz)	
X701	RSXZ16M9M01T	OSCILLATOR(16.9344 MHz)	
		DISPLAY TUBE	
FL601	RSL0201-F	DISPLAY TUBE	[MB]
		SWITCH(ES)	
S601	EVQ21405R	SW, TIME MODE	
S602	EVQ21405R	SW, AUTO CUE	
S604	EVQ21405R	SW, PEAK SEARCH	
S605	EVQ21405R	SW, RANDOM	
S621	EVQ21405R	SW, F. SKIP	
S622	EVQ21405R	SW, PAUSE	
S623	EVQ21405R	SW, OPEN/CLOSE	
S624	EVQ21405R	SW, PROGRAM	
S625	EVQ21405R	SW, REPEAT	
S626	EVQ21405R	SW, STOP	
S627	EVQ21405R	SW, PLAY	
S628	EVQ21405R	SW, R. SKIP	
S629	EVQ21405R	SW, CLEAR	
S630	EVQ21405R	SW, RECALL	
S651	EVQ21405R	SW, POWER	
S781	RSH1A005	SW, TRAY OPEN DET.	
S782	RSH1A005	SW, TRAY CLOSE DET.	
		CONNECTOR(S)	
CN401	RJS1A6823	CONNECTOR(23P)	
CN402	RJT029W06VT	CONNECTOR(6P)	
CN411	RJU076W24M1	CONNECTOR(24P)	[MB]
CN611	RJT076W24M	CONNECTOR(24P)	[MB]
CN701	RJS12Q9ZA	CONNECTOR(12P)	[MB]
CN702	RJS1A6723-1Q	CONNECTOR(23P)	
CN703	RJT029W06VT	CONNECTOR(6P)	
CN781	RJP6G17ZA	CONNECTOR(6P)	
		JACK(S)	
JK1	SJS9236	AC INLET	⚠
JK801	RJH3201N	LINE OUT	

Notes : • Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
• Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R1	ERQ16NKWR15E	1W 0.15
R12, 13	ERDS2TJ102	1/4W 1K
R14	ERDS2TJ103	1/4W 10K
R15	ERDS2TJ822	1/4W 8.2K
R16	ERDS2TJ680T	1/4W 68
R17	ERDS2TJ331	1/4W 330
R18	ERDS2TJ473	1/4W 47K
R19	ERDS2TJ472	1/4W 4.7K
R23	ERDS2TJ103	1/4W 10K
R28-30	ERDS2TJ103	1/4W 10K
R51	ERDS2TJ331	1/4W 330
R52	ERDS2TJ272T	1/4W 2.7K
R53, 54	ERDS2TJ472	1/4W 4.7K
R401	ERDS2TJ102	1/4W 1K
R403, 404	ERDS2TJ103	1/4W 10K
R405, 406	ERDS2TJ221	1/4W 220
R407	ERDS2TJ101	1/4W 100
R408-411	ERDS2TJ103	1/4W 10K
R413	ERDS2TJ102	1/4W 1K
R451-455	ERDS2TJ471	1/4W 470
R601	ERDS2TJ220T	1/4W 22
R651	ERDS2TJ221	1/4W 220
R701	ERDS2TJ561	1/4W 560
R703	ERDS2TJ823T	1/4W 82K
R707, 708	ERDS2TJ334	1/4W 330K
R709	ERDS2TJ683	1/4W 68K
R711	ERDS2TJ154	1/4W 150K
R712	ERDS2TJ221	1/4W 220
R717, 718	ERDS2TJ102	1/4W 1K
R721	ERDS2TJ101	1/4W 100
R722	ERDS2TJ683	1/4W 68K
R723	ERDS2TJ183T	1/4W 18K
R724	ERDS2TJ393	1/4W 39K
R725	ERDS2TJ472	1/4W 4.7K
R726	ERDS2TJ474	1/4W 470K
R727	ERDS2TJ153	1/4W 15K
R728	ERDS2TJ822	1/4W 8.2K
R731	ERDS2TJ223	1/4W 22K
R732	ERDS2TJ183T	1/4W 18K
R733	ERDS2TJ822	1/4W 8.2K
R735, 736	ERDS2TJ101	1/4W 100
R745	ERDS2TJ155	1/4W 1.5M
R751	ERDS2TJ102	1/4W 1K
R752, 753	ERDS2TJ392T	1/4W 3.9K
R754	ERDS2TJ103	1/4W 10K
R761, 762	ERDS2TJ103	1/4W 10K
R763	ERDS2TJ823T	1/4W 82K
R764	ERDS2TJ393	1/4W 39K
R765	ERDS2TJ224T	1/4W 220K
R766	ERDS2TJ104	1/4W 100K
R772, 773	ERDS2TJ220T	1/4W 22
R775, 776	ERDS2TJ392T	1/4W 3.9K
R777	ERDS2TJ102	1/4W 1K
R803, 804	ERDS2TJ224T	1/4W 220K
R805, 806	ERDS2TJ822	1/4W 8.2K
R807, 808	ERDS2TJ123	1/4W 12K
R809-812	ERDS2TJ333	1/4W 33K
R813-816	ERDS2TJ102	1/4W 1K
R817, 818	ERDS2TJ473	1/4W 47K
R819, 820	ERDS2TJ100	1/4W 10
R852	ERDS2TJ222	1/4W 2.2K
		CAPACITORS
C1	ECFTD103KXL	50V 0.01U
C10	ECFR1E104ZF5	25V 0.1U
C11 ⚠	ECA1CM222B	16V 2200U
C12	ECBT1C103NS5	16V 0.01U
C14	ECEA0JKA470B	6.3V 47U
C15 ⚠	ECEA1EU101	25V 100U
C16 ⚠	ECEA1EU331B	25V 330U
C17, 18	ECEA1HU101	50V 100U
C19	ECEA1EU101	25V 100U
C22	ECEA1AU331	10V 330U
C401	ECBT1C103NS5	16V 0.01U
C404	ECBT1C103NS5	16V 0.01U
C405	ECEA0JKA101B	6.3V 100U
C451-455	ECBT1H101KB5	50V 100P
C651	ECEA0JKA470I	6.3V 47U
C703	ECEA0JKA101I	6.3V 100U
C704	ECFR1E104ZF5	25V 0.1U
C705	ECEA1HKA010I	50V 1U
C706	ECBT1H101KB5	50V 100P
C707	ECFR1C273KR2	16V 0.027U
C708	ECBT1C472MR5	16V 4700P
C709	ECFR1C473KR2	16V 0.047U
C714	ECEA0JKA101I	6.3V 100U
C716	ECBT1H561KB5	50V 560P
C717	ECFR1E104ZF5	25V 0.1U
C718	RCQ52C0224J9	63V 0.22U [MB]
C721, 722	ECBT1H270J5	50V 27P
C723	ECEA0JKA221I	6.3V 220U
C724	ECFR1E104ZF5	25V 0.1U
C725, 726	ECBT1H102KB5	50V 1000P
C727, 728	ECEA1HKA010I	50V 1U
C730	ECFR1E104ZF5	25V 0.1U
C731, 732	ECEA0JKA221I	6.3V 220U
C733	ECFR1E104ZF5	25V 0.1U
C734	ECEA1AKA221I	10V 220U
C735-737	ECBT1E223ZF	25V 0.022U
C738	ECFR1C183KR2	16V 0.018U
C739	ECBT1C152MR5	16V 1500P
C740	ECBT1C272MR5	16V 2700P
C742	ECFR1C273KR2	16V 0.027U
C743	ECBT1E223ZF	25V 0.022U
C744	ECBT1C822MS5	16V 8200P
C747, 748	ECBT1C103NS5	16V 0.01U
C751	ECEA1CKA100I	16V 10U
C752	ECFR1E104ZF5	25V 0.1U
C765	ECBT1H331KB5	50V 330P
C766	ECBT1H391KB5	50V 390P
C767	ECEA1HKN010I	50V 1U
C768	ECFR1E682KR	25V 6800P
C769	ECBT1C222MR5	16V 2200P
C772-775	ECFR1E104ZF5	25V 0.1U
C776	ECBT1H180J5	50V 18P
C777	ECBT1H680J5	50V 68P
C781	ECEA1AKA101I	10V 100U
C803-806	ECBT1H391KB5	50V 390P
C807, 808	ECEA0JKA470B	6.3V 47U
C809, 810	ECBT1H102KB5	50V 1000P
C817	ECFR1E104ZF5	25V 0.1U

■ Cabinet Parts Location

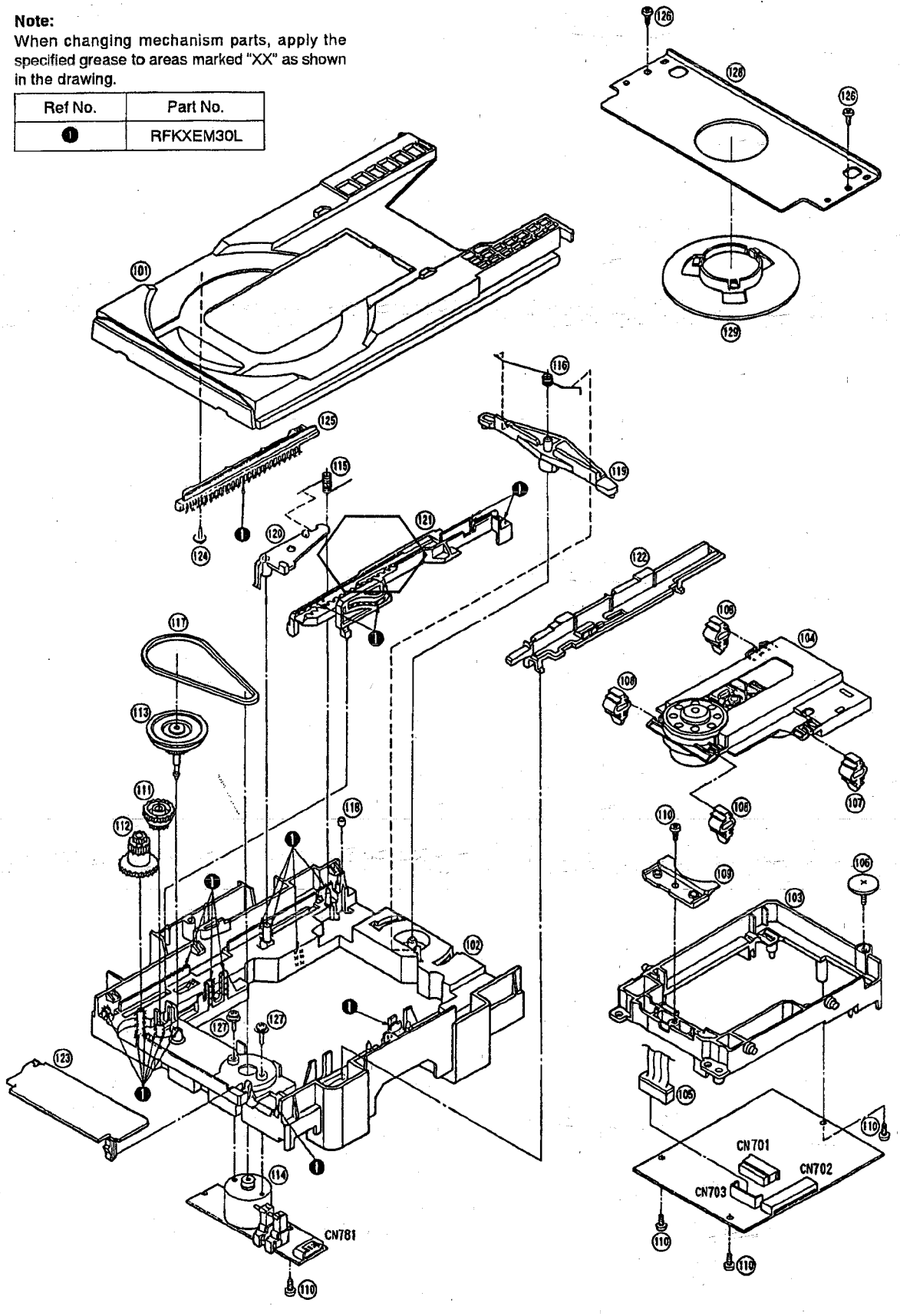



6
7
8
9
10
⑦
③
④
⑮
⑪
JK1
JK801
⑭
⑨
⑧
CN402
CN401
CN411
⑬
⑤
⑫
5-1

■ Loading Unit Parts Location

Note:
When changing mechanism parts, apply the specified grease to areas marked "XX" as shown in the drawing.

Ref No.	Part No.
❶	RFKXEM30L

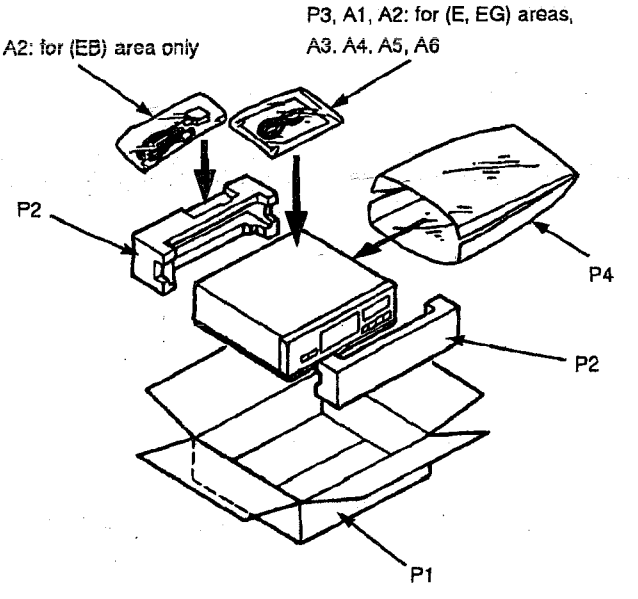


Note: The reference number SA represent the grease and tool used for this unit.

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS	
1	RKMD098-K	CABINET	[MB]
2	RYP0673Z-K	FRONT PANEL ASS'Y	[MB]
2-1	RGU1029-K	BUTTON, POWER	[MB]
2-2	RGU1197-K	BUTTON, MAIN	[MB]
2-3	RGU1199-K	BUTTON, SUB	[MB]
2-4	RKW0378A-R	PANEL	[MB]
3	RFKHLPG480AE	REAR PANEL ASS'Y	[MB] (EB)
3	RGR0154E-K	REAR PANEL	[MB] (E, EG)
4	XTB3+8JFZ	SCREW	
5	RFKJLPG370AE	BOTTOM CHASSIS ASS'Y	[MB]
5-1	RMG0384-T	FOOT	[MB]
6	RHD30035-K1	SCREW	
7	XTBS3+8JFZ1	SCREW	
8	REX0577-1	CABLE ASS'Y(6P)	[MB]
9	RGK0703-K	ORNAMENT	[MB]
10	XTB3+10JFZ	SCREW	
11	RHD30053	SCREW	[MB]
12	RKA0040B-K1	FOOT	[MB]
13	RMR0377-1	P. C. B. SUPPORT	[MB]
14	XTBR3+20JFZ	SCERW	[MB]
15	RWJ5223130EE	FFC(23P)	[MB]
17	RHD26021	SCREW	[MB]
18	RMR0826-K	FL HOLDER	[MB]
19	RGL0267-Q	LED INDICATOR	[MB]
20	RWJ1803150KK	FLAT CABLE(3P)	
		LOADING UNIT PARTS	
101	RGQ0130-K	TRAY	[MB]
102	RFKJLPG460AE	MECHANISM CHASSIS ASS'Y	[MB]
103	RMR0719-W1	MID. CHASSIS	[MB]
104	RAE1100Z-2	TRAVERSE UNIT	[MB]
105	REX0576	CABLE ASS'Y	[MB]
106	RHD30047	SCREW	[MB]
107	RMG0337-K	DAMPING RUBBER	[MB]
108	RMG0337-Q	DAMPING RUBBER	[MB]
109	RMR0750-W	STOPPER	[MB]
110	XTBS26+8J	SCREW	
111	RDG0142	RELAY GEAR	
112	RDG0259	DRIVE GEAR	[MB]
113	RDP0065	RELAY PULLY	
114	REM0047	MOTOR ASS'Y	[MB]
115	RME0063	LOCK LEVER SPRING	
116	RME0087	ASSIST SPRING	
117	RMG0158	BELT	
118	RMG0338-Q	STOPPER RUBBER	[MB]
119	RML0177	CHANGE LEVER	
120	RML0178-1	LOCK LEVER	
121	RMM0112	SLIDE PLATE 1	[MB]
122	RMM0113	SLIDE PLATE 2	[MB]
123	RMR0721-K	GEAR COVER	[MB]
124	RHD20009-1	SCREW	

Ref. No.	Part No.	Part Name & Description	Remarks
125	RFKNLPG460AA	DRIVE RACK ASS'Y	[MB]
126	XTB3+8JFZ	SCREW	
127	XYN2+F6FZ	SCREW	
128	RFKNLPG460AB	CLAMP BASE ASS'Y	[MB]
129	RFKNLPG460AC	CLAMPER ASS'Y	[MB]
		PACKING MATERIALS	
P1	RPG2960	PACKING CASE	[MB]
P2	RPN0861	CUSHION	[MB]
P3	XZB23X35C03	PROTECTION COVER	
P4	SPP730	PROTECTION COVER	
		ACCESSORIES	
A1	EUR643900	REMOTE CONTROL	[MB]
A1-1	UR64EC1638	BATTERY COVER	[MB]
A2	RJA0043-C	AC MAINS LEAD	[MB] ⚠ (E, EG)
A2	RJA0044-C	AC MAINS LEAD	[MB] ⚠ (EB)
A3	RFKSLPG580AE	INSTRUCTIONS MANUAL ASS'Y	[MB] (E)
A3	RQT3479-B	INSTRUCTIONS MANUAL	[MB] (EB)
A3	RQT3477-D	INSTRUCTIONS MANUAL	[MB] (EG)
A4	SJP2249-3	STEREO CONNECTION CABLE	
A5	RQA0117	WARRANTY CARD	
A6	RQCB0169	SERVICE CENTER LIST	
		GREASE OR TOOL	
SA1	RFKXEM30L	GREASE	
SA2	SZZP1054C	TEST DISC	

■ Packaging



Printed in Germany
MBV F9602 HH/TN/TW